

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Previously Presented) A method for processing a computer aided polygon model, comprising:

forming a vertex array which is linear and static and comprises the vertices of the image elements of the polygon model;

forming an index array which is linear and the elements of which determine the image elements of the polygon model by pointing at the vertices of the image elements in the vertex array, and which index array comprises an active part, the image elements determined by the elements of the active part being included in the polygon model part to be presented graphically;

forming additionally a hierarchical data structure whose hierarchy is based on the division of the vertices in the image space, the nodes of which hierarchical data structure point at nodes of a lower level in the hierarchy, the leaf nodes of the hierarchical data structure pointing at elements of the active part of the index array; and

reducing the polygon model part to be presented graphically by means of the hierarchical data structure, maintaining the linearity of the index array.

2. (Previously Presented) A method according to claim 1, wherein reducing the polygon model comprises:

removing at least two hierarchically equal leaf nodes from the hierarchical data structure;

including the location information representing the vertices pointed at by the index array elements pointed at by said at least two leaf nodes in a node of an upper level in the hierarchy, whereby this upper level node becomes a leaf node; and

removing at least one element of the index array pointed at by said at least two hierarchically equal leaf nodes from the active part.

3. (Previously Presented) A method according to claim 1, further comprising:

forming an index array in such a way that the index array also comprises a passive part, the vertices pointed at by the elements of the passive part belonging outside the polygon model part to be presented graphically; and

reducing the polygon model part by moving at least one index array element from the active part to the passive part.

4. (Previously Presented) A method according to claim 1, wherein forming a hierarchical data structure comprises:

dividing the coordinate space represented by the polygon model into hierarchical sectors on the basis of vertices contained in the vertex array;

including the pointers of the nodes corresponding to the sectors of the next lowest level in the hierarchy in the node corresponding to each hierarchical sector;

including the pointers pointing at the index array elements pointing at the vertices determining the lowest hierarchical sector in the leaf nodes.

5. (Previously Presented) A device for processing a computer aided polygon model, comprising:

a vertex array which is linear and static and comprises the vertices of the image elements of the polygon model;

an index array which is linear and the elements of which determine the image elements of the polygon model by pointing at the vertices of the image elements, and which index array comprises an active part, the image elements determined by the elements of the active part being included in the polygon model part to be presented graphically; and

a hierarchical data structure whose hierarchy is based on the division of the vertices in the image space, the nodes of which hierarchical data structure point at nodes of a lower level in the hierarchy, the leaf nodes of the hierarchical data structure pointing at elements of the active part of the index array; and

a processing unit connected to the index array, the hierarchical data structure and the vertex array to reduce the polygon model part to be presented graphically by means of the hierarchical data structure, maintaining the linearity of the index array.

6. (Previously Presented) A device according to claim 5, wherein the processing unit is arranged to remove at least two hierarchically equal leaf nodes from the hierarchical data structure;

wherein the processing unit is arranged to include the location information representing the vertices pointed at by the index array elements pointed at by at least two leaf nodes in a node of an upper level in the hierarchy, whereby this upper level node becomes a leaf node; and

wherein the processing unit is arranged to remove at least one index array element pointed at by said at least two hierarchically equal leaf nodes from the active part.

7. (Previously Presented) A device according to claim 5, wherein the index array further comprises a passive part, the vertices pointed at by the elements of the passive part belonging outside the polygon model part to be presented graphically; and

wherein the processing unit is arranged to reduce the polygon model by moving at least one index array element from the active part to the passive part.

8. (Previously Presented) A device according to claim 5, wherein the hierarchical data structure includes hierarchical sectors based on vertices of the vertex array;

wherein the node corresponding to each hierarchical sector includes the pointers of the nodes corresponding to the sectors of the next lowest level in the hierarchy; and

wherein the leaf nodes of the hierarchical data structure include pointers pointing at the index array elements pointing at the vertices determining the lowest hierarchical sector.

9. (Currently Amended) A distribution medium readable by a computer, wherein the distribution medium embodies a computer program for processing a polygon model, wherein the computer program is executed with a processor, and further wherein the computer program comprises comprising:

a vertex array which is linear and static and which includes the vertices of the image elements of the polygon model;

an index array which is linear and the elements of which determine the image elements of the polygon model by pointing at the vertices of the image elements, and which index array comprises an active part, the image elements determined by the elements of the active part being included in the polygon model part to be presented graphically;

a hierarchical data structure whose hierarchy is based on the division of the vertices in the image space, the nodes of which hierarchical data structure point at nodes of a

lower level in the hierarchy, the leaf nodes of the hierarchical data structure pointing at elements of the active part of the index array; and

computer-executable commands to reduce the polygon model part to be presented graphically by means of the hierarchical data structure, maintaining the linearity of the index array.

10. (Currently Amended) ~~A computer program~~The distribution medium according to claim 9, wherein the computer program comprises:

a computer-executable command to remove at least two hierarchically equal leaf nodes from the hierarchical data structure;

a computer-executable command to include the location information representing the vertices pointed at by the index array elements pointed at by said at least two leaf nodes in the node of an upper level in the hierarchy, whereby this upper level node becomes a leaf node; and

a computer-executable command to remove at least one element of the index array pointed at by said at least two hierarchically equal leaf nodes from the active part.

11. (Currently Amended) ~~A computer program~~The distribution medium according to claim 9, wherein the index array further comprises a passive part, the vertices pointed at by the elements of the passive part belonging outside the polygon model part to be presented graphically; and

wherein the computer program includes a computer-executable command to reduce the polygon model by moving at least one index array element from the active part to the passive part.

12. (Currently Amended) ~~A computer program~~The distribution medium according to claim 9, wherein the hierarchical data structure includes hierarchical sectors based on vertices of the vertex array;

wherein the node corresponding to each hierarchical sector includes the pointers of the nodes corresponding to the sectors of the next lowest level in the hierarchy; and

wherein the leaf nodes of the hierarchical data structure include pointers pointing at the index array elements pointing at the vertices determining the lowest hierarchical sector.

13. (Cancelled)